

RG 104, 8NS-104-94-077
Box 6

8NS-104-94-077, Miscellaneous
Correspondence & Memos, 1897-1994

US Mint - Philadelphia — Information

SHORT HISTORY OF THE MINT

Good Morning - Good Afternoon - Ladies and Gentlemen. Welcome to the United States Mint in Philadelphia. This is the oldest Mint in the United States and is the third built in this city.

The first Mint was established in Philadelphia by an Act of Congress on April 2, 1792 - it was located on Seventh Street north of Market.

The second, was located on the northwest corner of Chestnut and Juniper Streets, and its cornerstone was laid on July 4, 1829.

This Mint was built during the McKinley Administration at a cost of more than two million dollars, and it opened for business on June 13, 1901.

DESCRIPTION OF THE LOBBY

This lobby is finished with Italian marble - on the panels above are mosaic figures which depict coining in its infancy; they are reproductions of frescoes found in the ruins of Pompeii.

The ceiling, of 24 carat gold leaf - each unit being a piece of glass backed with gold, and the mosaics on the panels were designed and installed by Tiffany & Co. of New York, at a total cost of about \$90,000 and more than a year's work. They could not be duplicated today - mostly because artisans skilled in this type of work are not available.

COPY.

COINAGE OPERATIONS PHILADELPHIA MINT, DECEMBER, 1905.

Coinage:

RECEIPT:

GOLD.

Denomination.....	Pieces.....	Value
Double Eagles.....	11.....	220.00
Eagles.....	103,355.....	\$1,033,550.00
Half Eagles.....	135,052.....	675,280.00
Total.....	318,966.....	\$1,910,410.00

SILVER.

Denomination.....	Pieces.....	Value
Half Dollars.....	18,200.....	\$9,100.00
Quarter Dollars.....	56,200.....	14,050.00
Dimes.....	3,210,200.....	321,020.00
Total.....	3,284,600.....	\$344,170.00

MINOR.

Denomination.....	Pieces.....	Value
5ct Nickel.....	7,920,525.....	\$396,026.25
1ct Bronze.....	29,868,525.....	298,885.25
Total.....	37,789,050.....	\$694,911.50

In addition to the above there were coined for the Philippine Government the following coins:

Denomination.....	Pieces.....	Cost Value
Pesos.....	37.....	\$16.56
50 Centavos.....	37.....	8.27
20 Centavos.....	37.....	3.31
10 Centavos.....	37.....	1.65
5 Centavos.....	36.....	0.21
1 Centavos.....	36.....	0.11
1/2 Centavos.....	36.....	0.06
Total.....	256.....	\$30.17

Mint of the U. S. at Philadelphia,

SUPERINTENDENT'S OFFICE,

COPY.

COINAGE:

, 190

Superintendent

SUBJECT:

COINAGE OPERATIONS PHILADELPHIA MINT, DECEMBER, 1905.

GOLD.

Denomination.....	Pieces.....	Value.....
Double Eagles.....	11.....	\$220.00
Eagles.....	103,355.....	\$1,033,550.00
Half Eagles.....	135,056.....	\$675,280.00
Total.....		\$1,918,830.00

SILVER.

Denomination.....	Pieces.....	Value.....
Half Dollars.....	18,200.....	\$9,100.00
Quarter Dollars.....	56,200.....	\$14,050.00
Dimes.....	3,210,200.....	\$321,020.00
Total.....	3,284,600.....	\$344,170.00

MINOR.

Denomination.....	Pieces.....	Value.....
5ct Nickel.....	7,920,825.....	\$396,026.25
1ct Bronze.....	29,868,825.....	\$298,688.25
Total.....	37,789,650.....	\$694,714.50

In addition to the above there were coined for the Philippine Government the following coins:

Denomination.....	Pieces.....	Cost Value.....
Pesos.....	37.....	\$16.56
50 Centavos.....	37.....	8.27
20 Centavos.....	37.....	3.21
10 Centavos.....	37.....	1.65
5 Centavos.....	36.....	0.21
1 Centavos.....	36.....	0.11
1/2 Centavos.....	36.....	0.08
Total.....	125.....	\$30.14

No. of Inclosures,

Statement showing by denominations the average hourly number of gold and silver planchets weighed by the adjusters of the U. S. Mint, at San Francisco, California, during March, 1906.

G O L D & S I L V E R

D E H E PESO HD

Pyne,	: 71:128:440:292:	Hale,
Boynton,	: 77:152:580:240:	Ivancovich,
Craig,	: 76:110:403:227:	James,
Collins,	: 49:111:315:262:	LaGrange,
Callahan,	: 70:103:355:210:	McLeod,
Dickey,	: 90:155:450:274:	Neenan,
Donnelly,	: 65:124:416:---	Seaton,
Green,	: 49: 85:346:220:	Silsby,
Gillespie,	:---:117:---:313:	Walker,
Hammerly,	: 78:140:478:335:	Wilson,
Horton,	: 85:156:418:306:	

D E H E PESO HD

: 68:118:343:258:
: 75:146:410:192:
: 77:128:380:288:
: 71:150:452:295:
: 79:176:502:297:
: 77:129:388:273:
: 86:165:360:251:
: 66:105:---:295:
: 93:169:530:389:
: 86:191:582:380:
:---:---:---:---:

Standard and Light Weighers

F. W. F. W.

D E H E PESO H D

Ayer,	:--- 95:-- 174:537:342:	Johnstone,
Cunningham,	:12 375:23 663:750:472:	Reardan,
Evans,	:--- 70:-- 163:510:353:	Soule,
Henderson,	:26 466:35 693:712:481:	White,
Harris,	:13 343:22 604:523:444:	

F. W. F. W.

D E H E PESO H D

:--- 78:-- 144:495:409:
:--- 317:-- 539:641:421:
:--- 97:-- 168:557:410:
:--- 72:-- 145:461:355:
:--- ---:-- ---:---:---:

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G A T H E R E R S

Boynton,
Donnelly,

Gillespie,
Horton,
Silsby.

Ivancovich,
Nye,

P R E S S R O O M

Cunningham, E.,

Craig,
Graney,

Callahan,
Kenneinger.

TEST WEAIGHT

Fraser.

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LIGHT WEAIGHT

Van Orden.

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Acting Coiner.

Bureau of the Mint.
REC. APR 10 1906

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38	158	418	304
39	140	478	325
40	117	---	315
41	88	346	330
42	108	---	338
43	188	418	---
44	188	450	344
45	108	358	310
46	118	358	305
47	188	450	340
48	188	440	305
49	118	345	305
50	118	345	305

VISITORS FROM OTHER COUNTRIES - ACCEPTANCES

OFFICIAL OPENING CEREMONY - NEW PHILADELPHIA MINT - AUGUST 14, 1969

Austria

Dr. Lothar Egartner, W., HR.
Director
Osterreichisches Hauptmunzamt
Am Heumarkt 1
Vienna III, Austria

Canada

Mr. (and Mrs.) Ernest F. Brown
Acting Master, Royal Canadian Mint
320 Sussex Drive
Ottawa 2, Ontario, Canada

Mr. K. H. J. Clarke
Assistant Vice President
International Nickel Co. of Canada, Ltd.
Toronto-Dominion Centre
King and Bay Streets
Toronto 1, Ontario, Canada

Maj. (and Mrs.) Sheldon S. Carroll
Curator of Numismatic Collection
Bank of Canada
234 Wellington Street
Ottawa 4, Ontario, Canada

China (Republic of)

The Honorable Yu-chang Kan
Deputy Director, Issue Department
The Central Bank of China
Taipei, Taiwan

VISITORS FROM OTHER COUNTRIES

ACCEPTANCES

OFFICIAL OPENING CEREMONY

- NEW PHILADELPHIA MINT -

AUGUST 14, 1969

England

Mr. (and Mrs.) William Baird
Superintendent
The Royal Mint
Tower Hill
London, E. C. 1, England

Major Donald V. Deane
Tara, Fauvic, Jersey
Channel Islands (Via England)

Mr. (and Mrs.) D. J. Rogers
Director and Works Manager
The Mint, Birmingham, Limited
P. O. Box No. 290
Birmingham 18, England

Mr. and Mrs. Gordon A. W. Pike
Imperial Metal Industries (Kynoch) Ltd.
P. O. Box 216
Kynoch Works, Witton
Birmingham 6, England

Dennis S. Paravicini
Thomas De La Rue & Co. Limited
15/16 Bonhill Street
London E. C. 2, England

Mr. W. R. P. King
Managing Director
The Mint, Birmingham, Limited
P. O. Box No. 290
Birmingham 18, England

France

The Honorable (and Mrs.) Pierre DeHaye
Directeur des Monnaies et Medailles
11, Quai de Conti
Paris 6, France

Mr. Andre Begue
L'Engenieur en Chef
Administration des Monnaies et Medailles
11, Quai de Conti
Paris 6, France

VISITORS FROM OTHER COUNTRIES

-- ACCEPTANCES

OFFICIAL OPENING CEREMONY

- NEW PHILADELPHIA MINT

- AUGUST 14, 1969

Germany

Mr. Horst Rinke
Vereigte Deutsche Metallwerke
Altena, Germany

Mr. Zoebe
Technical Director
Vereigte Deutsche Metallwerke
Altena, Germany

Israel

Mr. Moshe Meirav
Economic Counselor
Embassy of Israel
Washington, D. C. 20008

Mr. (and Mrs.) Yitzhak Avni
Director-General
Israel Government Coins & Medals Corp. Ltd.
11, Keren Hayesod Street
Jerusalem, Israel

VISITORS FROM OTHER COUNTRIES--Acceptances

Reservations: Hotel Bellevue-Stratford
Philadelphia, Pennsylvania

Italy

The Honorable (and Mrs.) Ariberto Guarino
Il Directtore, La Zecca
Via Principe Umberto, 4
Rome, Italy

Mr. Nicola Jelpo
Engineer, La Zecca
Via Principe Umberto, 4
Rome, Italy

Mr. Adolfo Ramella (will stay with relatives)
Interpreter, La Zecca
Via Principe Umberto, 4
Rome, Italy

Miss Elizabeth Jones
Via Lazio, 20
Roma, Italy

50

Mexico

The Honorable (and Mrs.)
Carlos T. Martinez
El Director de la Casa de Moneda
Calle del Apartado 13
Mexico 1, D. F., Mexico

Sr. and Sra. Miguel L. Munoz (and daughter)
P. O. Box 897
Mexico 1, D. F., Mexico

Sr. Jose Barrios Vivar
Cashier, Casa de Moneda
Mexico, 1, D. F., Mexico

VISITORS FROM OTHER COUNTRIES--Acceptances

Reservations: Hotel Bellevue-Stratford
Philadelphia, Pennsylvania

Norway

The Honorable Arne Bakken
Director, Den Kongelige Mynt
Postboks 53
Kongsberg, Norway

South Africa, Republic of

The Honorable (and Mrs.) J. J. Groenewald
Director of the South African Mint
P. O. Box 464
103 Visagie Street
Pretoria, Republic of South Africa

SCHEDULE FOR FOREIGN REPRESENTATIVES AND U.S. MINT OFFICIALS

PHILADELPHIA -- AUGUST 13-16, 1969

Wednesday, August 13

- 10:00 am - Assay Commission Room
Opening Session
Miss Adams - opening remarks
Film - "The Treasury Story"
Tour Visitors Gallery
- 12:00 pm - O.T.A.C. Luncheon
Shoyers Restaurant
- 3:00 pm - Assay Commission Room
Press Briefing (press - foreign visitors, Mint officials)
Miss Adams - opening remarks and introduction of
foreign visitors and Mint officials
Question and answer period by press
- 3:30 pm - Cladding Line Seminar (Foreign visitors remain in Assay Room)
- 3:30 pm - Press tour of gallery and inspection of coin roller
- 5:30 to
7:30 pm - Engelhard Reception and Buffet
Bellevue Stratford - Burgundy Room
(Foreign visitors and Mint officials)

Thursday, August 14

- 9:00 am - Assay Commission Room
Coin Roller Seminar - followed by on site inspection
Automatic Coin Inspecting Devices Seminar
Strolling seminar on general manufacturing processes,
in operating area
- 12:00 pm - Kling Luncheon for foreign mint officials
Bookbinders Restaurant
- A.N.A. Ladies' Luncheon
Pier 1700 Restaurant

Thursday, August 14 (cont'd)

3:00 pm - Official Opening Ceremony
Amphitheater (opposite Mint)

5:30 to
7:30 pm - International Nickel Co. Reception and Buffet
Sheraton Hotel - Independence Room

Friday, August 15

10:00 am - Assay Commission Room - U.S. Mint Officials only

Foreign visitors free for:

10:30 am - Franklin Mint Cornerstone Ceremony

1:00 pm - Franklin Mint VIP Luncheon

3:00 pm - Assay Commission Room
Counterfeiting seminar

4:00 pm - Paper Issues, Mr. Conlon, Director, Bureau of Engraving
and Printing

Engraving division and assaying seminars

6:00 pm - Olin Brass Reception and Dinner
Union League Club - Oak Room

Saturday, August 16

7:00 pm - A.N.A. Reception
Sheraton Hotel - Pennsylvania Room

8:00 pm - A.N.A. Banquet
Sheraton Hotel - Grand Ballroom



THE DEPARTMENT OF THE TREASURY

WASHINGTON, D.C. 20220

OFFICE OF
DIRECTOR OF THE MINT

November 22, 1971

AIR MAIL

RECEIVED

NOV 26 1971

OFFICE OF
SUPERINTENDENT
U. S. MINT AT DENVER

Mrs. Betty Higby
Superintendent
United States Mint
Colfax and Delaware Streets
Denver, Colorado 80204

Attention: Mr. H. Frost, Jr.

Dear Mrs. Higby:

Enclosed herewith is a copy of the "Case Study of the new Philadelphia Mint", prepared in March 1970 for the Bureau of the Budget. The reasons for the study are outlined in the initial paragraphs thereof. The contents of the document will undoubtedly be helpful in planning the New Denver Mint.

Please arrange for a review of the case study by all personnel in the Denver Mint involved in the development of criteria for the new facility. It is desirable that such review will have been completed prior to our contemplated visit to the Philadelphia Mint on criteria development.

Sincerely,

Mary Brooks

Mary Brooks
Director of the Mint

Enclosures 1



Keep Freedom in Your Future With U.S. Savings Bonds

TREASURY DEPARTMENT BUREAU OF THE MINT

CASE STUDY OF THE NEW PHILADELPHIA MINT

Reasons for the Study

A comprehensive review and analysis of "Coin Requirements and Capacity in the Seventies: A Study of the United States Mint" was completed by a committee of Treasury officials in May 1969. The committee determined that coinage requirements will continue to increase, exceeding 9 billion coins in 1975, and 12 billion pieces by 1980. The committee concluded that the expanded coinage requirements could be provided only by a new mint, which would be required by 1980, and recommended that planning should begin promptly because of the long lead time involved. Denver was suggested as the logical site for a new mint.

In a letter to the Secretary of the Treasury from the Director of the Bureau of the Budget, dated January 8, 1970, it was proposed that a case study of the new Philadelphia Mint be undertaken to facilitate more effective planning, construction, equipping, and operation of the proposed new mint for the 1980's. Reasons for the study and areas for examination were outlined for the purpose of capitalizing fully on the Mint's experience in building the new Philadelphia Mint, and avoiding to the fullest extent possible the delays, equipment failures, and other undesirable problems that were encountered in building that facility. Specific questions were included in the study outline.

Before dealing directly with the specific areas of examination designated for review, a brief background of events leading to authorization and construction of the new Philadelphia Mint is presented.

Background Information

During the period from 1935 through the late 1940's the Mint attempted to obtain: (a) a new mint in Indiana; (b) a minor coinage plant in Philadelphia; and (c) a new mint in Philadelphia. During the 1940's funds were made available for a site for a new Philadelphia Mint, and with pressure from various Philadelphia Congressional interests, at least 15 sites were given consideration by Public Buildings Service. Political pressures continued for more than a year without reaching a compromise on a site; the funds became unavailable, and the project was dropped.

During the mid-1940's and the 1950's, the Denver Mint and the Philadelphia Mint were enlarged and partially revamped, and larger production equipment provided, bringing the capacity of those two plants to the neighborhood of 1 billion coins per shift year, with a potential capacity

of 4 billion per year on a round-the-clock basis, 7 days per week. A decision was made that this capacity potential was more than adequate to meet the foreseeable needs of the country, and as an economy measure, the San Francisco Mint was closed. Legislation was later enacted changing the name of the San Francisco Mint to the San Francisco Assay Office.

Coinage requirements did not remain at the predicted rate of 1.0 to 1.2 billion coins per year, but continued to increase, and during the early 1960's, the Federal Reserve Banks were consuming coins at the rate of 3.5 billion pieces per year. The continuing increase in the demand for coins subsequently led to a crash coinage program, and reactivation of the San Francisco Assay Office on a temporary basis.

The Bureau of the Budget employed Arthur D. Little, Inc., to make a comprehensive analysis of coinage requirements over a period of years, and to determine if existing minting facilities were adequate to provide those requirements. Their final report was submitted to the Director of the Bureau of the Budget, on February 11, 1963. Their conclusions and recommendations included: (a) coinage requirements of 18 billion coins by 1990; (b) Mint facilities were completely inadequate; and (c) prompt action should be taken to construct a new mint.

A policy decision was made that a new mint should be constructed in Philadelphia to replace the outmoded mint in that city. Confidential arrangements were made with Urban Renewal Administration authorities for a site of land for the new mint, thereby avoiding the political pressure over a site which had previously occurred. The Mint requested a 7.5 acre tract as an absolute minimum, but the largest tract which could be made available through Urban Renewal included only 5.3 acres. Acceptance of this tract, in the center of the city, was considered the best strategy in view of previous experience with site selection.

The Treasury requested approval from Congress for a new mint early in 1963, and funds were made available in the latter part of 1964. A dedication ceremony for the mint was held on August 14, 1969, with major equipment installations still going on, but expected to be completed by mid-1970. Further equipment changes, occasioned by the substitution of 4-strike stamping presses for coin rollers, are expected to be completed by mid-1971.

In summary, the project which started early in 1962 should be completed by mid-1971, at a cost of about \$41 millions. This timing emphasizes the need for prompt action if a new Denver Mint is to be in operation by 1980.

Specific Areas of Examination

Questions presented by BoB in a study outline, with answers based on the best information available, are presented below:

A - SITE

Q-1. What are the good and bad features of the site of the new Philadelphia Mint?

A. GOOD: Adequate commercial electrical power, gas, steam, water and sewerage readily available. Commercial transportation including nearby subway available to employees. Good highway systems available for receiving raw materials and shipping finished products. Numerous contractors available for competitive bidding. Nearby city fire and police protection. Meets all essential minimum criteria (See Question No. 3, below), for a plant capable of production of 2 billion coins per shift year.

A. BAD: The size of the site is its most undesirable feature. Since the existing building occupies the site completely, provisions for expansion are non-existent. Location in historical area resulted in a monumental structure which increased the overall cost significantly (special architectural features, granite facing, tourist accommodations). (+ 2.5 Million)
Very limited parking area for management employees only. Problem of noise levels in center of city from second and third shift operations.

Q-2. What pressures forced the Mint to select the new Mint's site? Could they have been avoided? How?

A. As previously explained, site selected on confidential basis in advance of announcement of new mint, avoiding political pressures previously encountered. Although this resulted in a 5.3 acre site instead of the 7.5 acres requested, it did avoid pressure for other sites, which could have delayed project.

Q-3. What are the essential, minimum criteria which any prospective site, regardless of city, must meet?

A. Site must be adequate for required manufacturing and office space, with room for expansion and employee parking, preferably ~~15~~ to ~~25~~ acres.

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LIMITED OFFICIAL USE

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Ready access to major industrial-size electric, gas, steam and water service lines.

Accessibility and availability of commercial transportation for personnel, and receiving raw materials and shipping finished products.

Nearby security and fire protection.

Physical condition of ground must be suitable for construction and capable of supporting heavy structure and equipment.

Criteria established by Executive Order 11512, including availability of adequate low and moderate income housing.

Cost of site should be reasonable.

B - DESIGN

Q-1. What are the good and bad features of the new Philadelphia Mint's design from the manufacturing point of view? As a tourist attraction?

A. Good Features:

Design incorporates latest state-of-the-art industrial equipment for use in melting, casting, and rolling; and strip bonding of coinage metals.

Expansive open manufacturing area and in-line operations eliminate restrictions in handling of materials, and reduces need for additional large in process storage areas. Through makeup, melting, casting, and rolling the latest mechanized handling techniques are built into the system.

Maintenance shops are adjacent to manufacturing areas, as they should be, for effective support to production operations.

Manufacturing operations not over automated, i.e., not beyond state-of-the-art.

As a tourist attraction - design is ideal.

A. Bad Features:

Common manufacturing area for melting, casting and rolling operations is undesirable. (Note: charcoal and lampblack

LIMITED OFFICIAL USE

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have filtered over entire plant). Melting and casting operation should be physically separated and isolated from other operations.

Inadequate work area for rebuilding melting furnaces, launders, distribution boxes and molds. Area should be provided within the casting platform work area, and not require this work to be accomplished on the production floor.

Vertical obstruction to furnaces, molds, launders, and distribution boxes, due to interference from smoke collection system ductwork and plenum, restricts removal of melting and casting equipment when required.

Water recirculating system for melting and casting inadequate.

Baling (compressing) equipment for surface milled scrap from ingots not provided. Handling of this low density scrap offers problems in batch weighing, handling, and charging into furnace and unduly extends normal melting time.

Due to the nature of the high noise level associated with blanking operations, this area should be isolated in a properly designed acoustical, noise depressant area, rather than installed in an open area common to all other coining operations.

Necessary addition of cladding mill and auxiliaries (to comply with Coinage Act of 1965), resulted in crowding the coining bay.

Inadequate area provided for visual inspection of coins.

Facility and equipment design was minimal. Spare capacity should have been provided for all support systems.

Equipment with heavy power demands (reheat furnaces) should have separate incoming power source.

Q-1. (Continued) Must mints continue to be built as monuments and tourist attractions or can we design them as manufacturing plants? What compromises did the former require in the instance of Philadelphia? At what cost?

- A. There is little evidence that the Philadelphia Mint would have been less monumental had it been constructed at another location. Historically, most of the mints of the world have been so built, as a matter of national pride. This is not necessary from a manufacturing standpoint, but is a matter for administrative decision.

United States Mints have held great appeal to the American public, as is the case with other public buildings such as the Bureau of Engraving and Printing, or the Federal Bureau of Investigation. It is anticipated that this appeal will continue to increase in the years ahead, as it has during the past ten years. Construction of a new mint without adequate visitors' facilities would certainly invoke considerable criticism from the millions of coin collectors and numismatists.

It is obvious that some compromises from the manufacturing point of view were made at the new Philadelphia Mint in favor of visitors' facilities. It could be assumed that the lobby and visitors' areas could have been made smaller, thereby adding to manufacturing space.

It is estimated that the cost of the lobby area, visitors' gallery, escalators, elevator and entrance features, cost approximately \$1 million. It should be noted that some of this cost would have been necessary, even if no provisions had been made for visitors.

Certainly it would be possible to construct a new mint designed primarily as a manufacturing plant, but still include adequate provision for visitors to review the coinage operations.

C - CONSTRUCTION AND EQUIPPING.

- Q-1. What were the factors which contributed to the time "over-run" in completion of the mint (strikes, changes in design and engineering, supervision, etc.)?

- A. During the planning for the new Philadelphia Mint, the United States was going through a severe coin shortage. There was considerable pressure to complete the Mint quickly in order to produce additional coinage. The consultant firm contended that a new mint could be completed in two years, and this was accepted by some Government policy making officials.

However, efforts to "build the mint in two years" led to unrealistic attempts to expedite by phasing, such as award of contract for foundations and construction up to the first floor level, before final selection of processes and equipment; award of installation contract before detailed design of equipment was completed. Phasing is normally undertaken to work within physical limitations, or as in the case of the mint, to accomplish early completion by starting construction before completion of design. The success of phased construction is historically poor on complex projects..

In the case of the Philadelphia Mint, phasing provided an opportunity for an over-run in time, as upon completion of Phase I, a new policy was dictated by the Administration to slow down and stretch out all Government construction projects. The Mint was permitted to proceed only with contracts for completion of the Mint deliberately "stretched-out" to delay its completion.

Other factors contributing to the over-run included numerous strikes, shortages of electricians, and bad weather. Undoubtedly, many errors and delays could have been avoided or minimized if it had been possible to appoint the Technical Consultant to the Director, or someone on his direct staff, as Project Manager, and if the technical knowledge and skills of qualified Mint personnel had been used to better advantage in making critical decisions on building and equipment.

Q-1. (Continued) What steps can be taken to expedite construction? (Project Manager)

- A. The first prerequisite to a satisfactory design is the establishment of criteria. The criteria for design should be developed from the selected manufacturing processes, and the needs of the various departments to be represented in the new facility. Criteria should initially be outlined independently of the Architect-Engineer. The final development should be jointly with the Architect-Engineer, and the final written criteria establishes a meeting of minds between Architect-Engineer and the Government.

The Architect-Engineer design fee should be negotiated after criteria has been established. Design is then to be reviewed at set percentage points during its progress. Review is primarily to determine whether the criteria is being satisfied, and whether the design will result in an economically constructible and operational facility.

At the very start of criteria development, a project staff under the supervision of the Technical Consultant to the Director of the Mint should be established. The Project Manager should be responsible for criteria development, design supervision, and construction management. This will assure project continuity.

This manager must be the single source of contact to the Architect-Engineer. He must be empowered to make final decisions concerning design and construction after review of management, organizational and operational needs. These needs should be clearly established within the criteria document. Too often throughout the Philadelphia project, too many people were involved in the making of decisions. Had all decisions been made by one authority, there would have been less mistakes than were experienced with the multiple authority system.

Facility design should include adequate utility systems for all equipment to be installed. Preferably, no utility system design should be postponed until after basic construction is completed. Example; provision for utilities for existing Mint equipment, and for coin roller and security and material handling systems were postponed on the new Mint project, resulting in many change orders.

Q-2. How can the Mint strive for modern up-to-date production facility with the latest equipment the state-of-the-art will permit and yet not over-commit itself should the equipment not materialize?

A. Spectacular advances have been made in the adoption of more sophisticated equipment by the brass mill industry during recent years. Any new mint should take full advantage of such advances and should be designed around the proven state-of-the-art at the time of design. The Philadelphia facility includes the latest most modern equipment in this respect, including direct chill casting equipment, latest rolling equipment, strip welding, and Bell annealing equipment. Strip bonding equipment was added after the new clad coins were required by the Coinage Act of 1965.

The state-of-the-art was exceeded with the coin roller. The Mint was designed around twelve 4-strike coining presses and two coin rollers utilizing all available space. If sufficient unassigned space had been available, with ample additional funds, a greater number of 4-strike presses could have been purchased and installed in the event that the coin roller did not work.

LIMITED OFFICIAL USE

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A complete reply to this question is difficult because of the various types of equipment considered for a new mint and the need to have the most modern equipment available. As an example, additional coining presses can be more easily installed in space formerly assigned for some other purpose, but an installation such as the cladding line required very extensive foundation work and expansive basement rooms for utilities and other services. Introduction of the cladding line late in the project required very extensive and expensive building changes.

Q-3. What problems did the Mint experience in the shift of equipment from the old Mint to the new? Could they have been avoided or lessened?

A. The old Mint in Philadelphia has an antiquated electrical power system and many tools could not be used in the new Mint until power conversions had been accomplished. Since we had not anticipated using many of the stamping presses, this caused a delay in changing the presses over to the new requirement in the new Mint.

Generally speaking, we experienced no unusual problems in moving equipment from the old Mint to the new one.

D - BREAK IN.

Q-1. What problems did or is the Mint experiencing during "break in?"

A. In connection with the design and successful operation of a new brass mill, or any other new metallurgical facility, substantial risks are necessarily involved. It is common experience in the brass mill industry, and in other industries, to experience "bugs" in new types of equipment, and many months are sometimes required to de-bug new equipment. The Mint is no exception and we did encounter many problems. For example, four new melting furnaces, each with its own transformer, were installed in the new Mint; one by one, each transformer blew out - one had a rather extensive fire. The last of these equipment failures is now being replaced by the manufacturer, under the equipment guaranty, and production is increasing on a satisfactory basis. Many such problems have been encountered, and successfully resolved, and the new Philadelphia Mint has the capability as demonstrated to date to meet expected production requirements.

Q-1. (Continued) Can the break in period be shortened? Can break in costs be reduced?

A. In many cases, equipment problems experienced were due to some lack of cooperation on the part of vendor. Problems experienced were also generally associated with manufacturing revisions that had not been documented and forwarded for construction revisions. Numerous equipment failures and operational inefficiencies were

common. Better source inspection of equipment should be performed, and new equipment should not be shipped to the project until its basic functions have been proven to be satisfactory to the extent feasible.

Many items in the new Mint are standard equipment, thoroughly developed in industry throughout years of use, however, the equipment did not function as intended. Examples include virgin metal shear, slab cropping saw, welder-trimmer, slitter-trimmer, rolling mill conveyors, etc. All of this equipment should have received better source inspection, and more adequate proof of operational acceptability before shipment.

Break in costs in the new Mint were substantially reduced through arrangements made with private industrial plants to permit Mint employees to visit their plants and not only witness the operation of equipment similar to that installed in the new Mint, but also actually to operate it. Some of our employees had never seen the types of equipment installed in the new Mint. However, after visiting two or three private industrial plants, and actual operating equipment in these facilities, the break in period in the Mint was substantially reduced. Also, expert melters and rollers from private industry came to the Mint and helped "de-bug" our new equipment.

OTHER AREAS FOR CONSIDERATION.

1. Suggestion related to Question D - Break In:

Do not have new equipment built and delivered to the new Mint before space is available for it.

As part of the plan that the new Philadelphia Mint could be completed in two years, new equipment was ordered for delivery within that period. However, the Mint was not completed on time, and new equipment arrived and had to be stored for many months in a warehouse. In some instances, costly deterioration occurred. This added to the problems of installation, break in, and start up.

2. Documentation:

A review of the Philadelphia situation indicates that a much better job should be performed in providing complete documentation for construction of a new mint. Documentation should be improved in the following areas:

1. Communication within the agency concerning criteria, design, and construction.
2. All communications between the Government, Architect-Engineer and contractors.
3. Reasons for and effects of change orders at the time of issuance.
4. Preparation of as-built drawings and specifications.
5. Reports of equipment failures, and requested improvements.

It should be established that this documentation is necessary because the project is of such complexity and duration, that the history of events cannot be carried in the minds of the few people involved at any given time.

3. Escalating Construction Costs.

A substantial increase in construction costs has occurred since the inception of the new Philadelphia Mint. Increases in hourly wages for construction workers are shown in the following tabulation:

<u>Increase in Hourly Wages</u>			
	August	January	Effective
	<u>1965</u>	<u>1970</u>	<u>1971</u>
Carpenters	\$4.80	\$6.08	\$8.34
Sheet Metal Workers	5.41	6.87	9.71
Plumbers	5.44	7.39	9.08
Electricians	5.55	7.30	9.08
Average	\$5.30	\$6.91	\$9.05
		+30.39%	+30.98%

It will be noted that during the five-year period from 1965 through 1970 there was an average increase of about 30% in hourly wages over that entire period. However, as a startling contrast, wages for 1971 represent another 31% increase for the period of a single year.

Since wages are estimated to represent at least 50% of construction costs, and increasing steadily to a larger percentage, this should be recognized as a very important factor in estimating costs for a new Denver Mint.

CONCLUSION

There are many lessons to be learned from a comprehensive review of the overall project of planning and constructing the new Philadelphia Mint. Looking back, at this time, it is possible to identify many things which could have been handled in a more efficient manner. If, somehow, we were to start over again on this same project, many things could be done differently, countless changes could be avoided, and many thousands of dollars saved.

An attempt has been made in this study to avoid details of construction decisions that apply strictly to the Philadelphia Mint. Instead, emphasis has been given to problems of a more general nature that could be used to advantage in planning and constructing the new Denver Mint.

Major areas for consideration include the following:

1. Purchase adequate site, allowing for future expansion.
2. Select equipment based on proven state-of-the-art.
3. Design building after basic equipment processes determined.
4. Issue single contract for construction of building.
5. Avoid phased construction.
6. Reduce or eliminate numerous planning changes.
7. Give Project Manager full authority for final decisions.
8. Substantially reduce the number and cost of change orders.

In conclusion, it should be emphasized that the new Philadelphia Mint project is expected to be successful from an operational viewpoint. When the new equipment items have been installed in replacement of the coin rollers, the new Mint should be fully capable of producing coin at the planned objective, i.e., 4 billion coins on a two-shift basis.

RECOMMENDATION

The benefits of the case study of the new Philadelphia Mint can perhaps best be utilized in a positive plan for construction of a new Denver Mint. This is outlined below:

PLANS FOR CONSTRUCTION OF NEW DENVER MINT

1. Purchase land - about 20 to 30 acre site.
2. Employ Management Consultant Firm to study plant and equipment requirements. (*criteria*)
3. Mint and GSA select Architect-Engineer firm.
4. Prepare preliminary building plans, based on selected processes.
5. Mint and A-E prepare detailed equipment specifications for purchase of equipment.
6. A-E and GSA and Mint prepare detailed drawings for entire building, covering all requirements.
7. GSA invite construction bids, and award contract.
8. Mint purchase equipment, with specified delivery dates coordinated with building completion, as specified in construction Critical Path Method.
9. Mint appoint Mint Project Manager, with full authority for final decisions.
10. Project Manager coordinate overall project with Project Staff Managers of A-E, GSA, and building contractor.
11. Mint and GSA and A-E supervise building construction.
12. Mint and A-E coordinate building construction with equipment delivery, and supervise equipment installations.
13. Limited or no changes permitted after equipment and building specifications finalized.
14. This plan should greatly curtail or eliminate change orders, greatly reducing cost and speeding project completion.

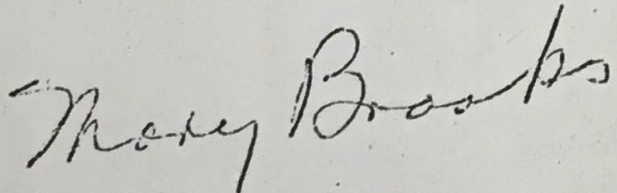
Public Law 88-102, approved August 20, 1963, authorized the Secretary of the Treasury to construct buildings required in connection with operation of the Bureau of the Mint. The Act authorized appropriations of \$30,000,000, which was increased to \$45,000,000 by the Coinage Act of 1965. Approximately \$4,500,000 of the Authorization is available for

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appropriation, and could be used for expenses through Item 6 of the above plan. This amount should be sufficient to get the project underway in an orderly manner.

Additional authorization and appropriation of funds would be required later for construction of the building, purchase and installation of equipment, and related expenses.

A handwritten signature in cursive script, reading "Mary Brooks". The signature is written in dark ink and is positioned above the printed name and title.

Mary Brooks
Director of the Mint

March 18, 1970

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